IN THE CLAIMS

Please replace the claims with the following:

1. (Previously Presented) A method of determining the nitrogen content of a nitrided gate oxide layer on a semiconductor substrate comprising:

nitriding a gate oxide layer on a semiconductor substrate using nitric oxide (NO) gas to form the nitrided gate oxide layer on the substrate;

oxidizing the nitrided gate oxide layer on the substrate;

measuring the thickness of the oxidized nitrided gate oxide layer;

optionally calculating the change in thickness of the oxidized nitrided gate oxide layer; and

determining if the measured thickness or calculated change in thickness of the oxidized nitrided gate oxide layer exceeds a target thickness value.

2. (Original) The method of Claim 1, wherein the oxidizing step comprises rapid thermal oxidation of the nitrided gate oxide layer in a rapid thermal processing (RTP) chamber.

3. (Original) The method of Claim 1, further comprising correlating the measured thickness or change in thickness of the oxidized nitrided gate oxide layer with the nitrogen content of the gate oxide layer.

4. (Canceled)

5. (Previously Presented) The method of Claim 1, further comprising forming the gate oxide layer on the substrate prior to the nitriding step.

6. (Original) The method of Claim 3, wherein the correlating step comprises:

measuring the oxidized nitrided gate oxide thickness for a plurality of samples each having a known nitrogen content;

optionally calculating the change in thickness after oxidizing the nitrided gate oxide layer for each sample; and

performing a least squares regression analysis to generate a calibration curve for nitrogen content of the nitrided gate oxide as a function of oxidized nitrided gate oxide thickness or change in oxidized nitrided gate oxide thickness.

7. (Previously Presented) The method of Claim 1, wherein the step of determining the change in thickness of the oxidized nitrided gate oxide layer comprises determining an initial gate oxide thickness by measuring the thickness of the gate oxide layer prior to the oxidation step and calculating the difference between the measured oxidized nitrided gate oxide layer thickness and the initial gate oxide thickness.

8. (Original) The method of Claim 7, wherein the initial gate oxide thickness is measured before the nitridation step.

9. (Original) The method of Claim 7, wherein the initial gate oxide thickness is measured after the nitridation step.

10. (Previously Presented) A method of determining the nitrogen content of a nitrided gate oxide layer on a semiconductor substrate comprising:

nitriding a gate oxide layer on a semiconductor substrate using nitric oxide (NO) gas to form the nitrided gate oxide layer on the substrate;

oxidizing the nitrided gate oxide layer on the substrate;

measuring the thickness of the oxidized nitrided gate oxide layer;

calculating the change in thickness of the oxidized nitrided gate oxide layer; and

determining if the measured thickness or calculated change in thickness of the oxidized nitrided gate oxide layer exceeds a target thickness value wherein calculating the change in thickness of the oxidized nitrided gate oxide layer comprises determining an initial gate oxide thickness by estimating the thickness of the gate oxide layer prior to the oxidation step and calculating the difference between the measured oxidized nitrided gate oxide layer thickness and the initial gate oxide thickness.

11. (Original) The method of Claim 10, wherein the initial gate oxide thickness is estimated from previously collected gate oxide thickness data.

12. (Original) The method of Claim 1, further comprising a step forming a gate electrode layer over the gate oxide layer.

13. (Original) The method of Claim 12, further comprising a step of implanting boron atoms in the gate electrode layer.

14. (Original) The method of Claim 12, wherein the predetermined value corresponds to a nitrogen content sufficient to prevent boron atoms from diffusing through the gate oxide layer and into the semiconductor substrate.

15. (Original) The method of Claim 1, wherein the oxidation step is conducted at a temperature of 900 to 1025 °C.

16. (Original) The method of Claim 15, wherein the oxidation step is conducted for 10 minutes or less.

17. (Previously Presented) The method of Claim 1, wherein the oxidizing step is performed in the same tool as the nitridation step.

18. (Previously Presented) The method of Claim 1, wherein the nitridation step is performed in a first tool and the substrate is transferred to a different tool for the oxidizing step.

19. (Previously Presented) A method for monitoring the nitrogen content of a nitrided gate oxide layer on a semiconductor substrate, the method comprising:

for each substrate in a batch of semiconductor substrates, nitriding a gate oxide layer on the semiconductor substrate using nitric oxide (NO) gas to form the nitrided gate oxide layer on the substrate, oxidizing the nitrided gate oxide layer on the substrate to form an oxidized nitrided gate oxide layer, and measuring the thickness of the oxidized nitrided gate oxide layer with a film thickness measuring device;

collecting data on the thickness of the oxidized nitrided gate oxide layer for each substrate in the batch on a computer in communication with the film thickness measuring device;

storing the oxidized nitrided gate oxide thickness data for the batch in a data base;

computing a batch average value for the thickness of the oxidized nitrided gate layer;

storing the batch average value on the computer;

repeating steps (a) through (e) above for additional batches of semiconductor substrates;

determining process control limits from the stored batch average values; and

monitoring the nitrogen content by oxidizing a semiconductor substrate having a nitrided gate oxide layer, measuring the oxidized nitrided gate oxide layer thickness and comparing the measured value to the process control limits.

20- 22. (Canceled).

23. (New) The method of Claim 19, further comprising a step of forming a gate electrode layer over the gate oxide layer and implanting boron atoms in the gate electrode layer.